

A Miniaturized and Robust FTS Sensor, Phase I

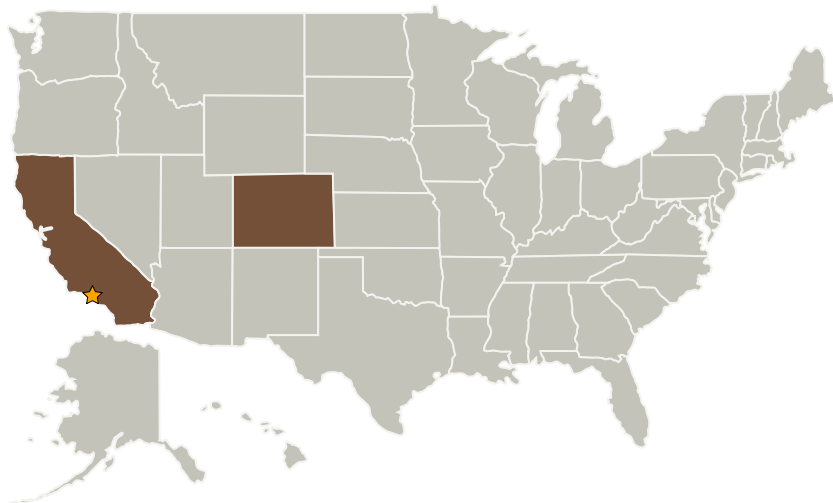
Completed Technology Project (2004 - 2004)



Project Introduction

Vescent Photonics details a miniaturized and robust Fourier transform spectrometer(FTS) for in-situ chemical and spectral analysis. Phase I research will focus on innovative electro-optic technology that enables moving mirror replacement. A successful phase I effort will pave the way for a phase II chemical sensor prototype. The attributes of this sensor: i) small size, comparable to a book of matches, ii) low mass, only tens of grams, iii) small energy consumption, < .001 Watt-hours per measurement, iv) high sensitivity, detectable chemical densities < 10^{13} per cc, and v) robust monolithic construction, are aptly suited for future NASA missions. Such a sensor could be integrated and deployed with a variety of exploration platforms. A single device would provide identification and quantification of multiple compounds (e.g., biogenically important CH₄, NO_x, H₂O, CO, etc.).

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Vescent Photonics, Inc.	Supporting Organization	Industry	Arvada, Colorado



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

California

Colorado

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Scott R Davis

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.3 In-Situ Instruments and Sensors
 - └ TX08.3.2 Atomic and Molecular Species Assessment